

REMARKS

Claims 1-32 are pending in this application. By this Amendment, the drawings are corrected pursuant to the attached drawing sheets, the specification and claims 1, 29 and 30 are amended, and claims 31 and 32 are added. Claims 1, 29 and 30 are amended to recite features supported in the specification on page 4, line 3 – page 5, line 17, page 33, lines 6-21 and Figs. 28 and 29. No new matter is added by any of these amendments.

Applicants appreciate the courtesies extended to Applicants' representative by Examiners Akkapeddi and Kim during the February 18, 2004 interview. In accordance with MPEP §713.04, the points discussed during the interview are incorporated in the remarks below and constitute Applicants' record of the interview.

Reconsideration based on the following remarks is respectfully requested.

I. The Drawings Satisfy All Formal Requirements

The Office Action objects to the drawings based on informalities. Figures 6-9, 11-14 and 27-30 are corrected pursuant to the attached drawing sheets. Formal Drawings will be filed upon Notice of Allowance. Withdrawal of the objection to the drawings is respectfully requested.

II. The Claims Satisfy All Formal Requirements

The Office Action objects to claim 28 based on informalities. This objection is respectfully traversed. Applicants assert that the term "offset" can be clearly understood as a separation distance along an identified plane. Such offsets are described in the specification and drawings, as well as recited in claim 28. Withdrawal of the claim objection is respectfully requested.

III. Claims 1-30 Define Patentable Subject Matter

The Office Action rejects claims 1-20 and 28 under 35 U.S.C. §103(a) over U.S. Patent 5,844,644 to Oh *et al.* (Oh) in view of U.S. Patent 5,561,538 to Kato *et al.* (Kato). This rejection is respectfully traversed.

Oh and Kato do not teach or suggest a liquid crystal device including, *inter alia*, first and second alignment layers aligning the liquid crystal such that there is a clear viewing direction through the liquid crystal and both of the substrates, the clear viewing direction having a coplanar component and a normal component, the coplanar component being parallel to one of the first and second planar surfaces, the normal component parallel to the gap, the first substrate and the second substrate transmitting, of light incident through one of the substrates, light incident from the clear viewing direction greater than light incident from another direction having a component opposite to the coplanar component of the clear viewing direction, as recited in claim 1.

Nor do Oh and Kato teach or suggest a liquid crystal device including, *inter alia*, liquid crystal sandwiched between the first substrate and the second substrate, the liquid crystal having an alignment state that produces a clear viewing direction through the liquid crystal, wherein the first substrate and the second substrate are formed with a first opening area and a second opening area for each pixel, and wherein, of the first opening area and the second opening area, a center position of the opening area formed in one of the first substrate and the second substrate is offset toward the clear viewing direction with respect to a center position of the opening area formed in another substrate from which light is transmitted, as recited in claim 28.

Instead, Oh discloses a liquid crystal display that focuses light rays through alignment layers. In particular, Oh teaches alignment layers 128 and 128' that refract light rays to focus between a pixel electrode 117 and a counter electrode 112. See col. 3, lines 31-62 and Fig. 3 of Oh. Also, Oh focuses light rays perpendicularly incident to the substrates. In contrast, Applicants' claimed features direct light through opening areas oriented to provide more light through a clear viewing direction having a coplanar component that is parallel to one of the planar surfaces, as well as to the opening area. Moreover, Applicants' claimed features

provide for light to be transmitted through the liquid crystal and the substrates to include a component parallel with their planar surfaces, and not only perpendicularly incident to them.

Further, Kato discloses a display apparatus 10 having a microlens array 5. In particular, Kato teaches a liquid crystal panel 1 with the microlens array 5 with microlenses 5a to provide magnification. Kato further bends the light through a field lens 7 to converge to an eyepiece 8. See col. 8, lines 34-66 and Fig. 1 of Kato. Also, as admitted in the April 18, 2003 Final Office Action on page 7 at section 8(c), Kato fails to teach or suggest offsetting the center positions of the opening areas formed in the first and second substrates.

Further, there is no motivation to combine features related to the refracting alignment layers of Oh with the magnifying microlens array of Kato, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

The Office Action rejects claim 21 under 35 U.S.C. §103(a) over Oh and Kato and further in view of U.S. Patent 6,437,764 to Suzuki *et al.* (Suzuki). This rejection is respectfully traversed.

Suzuki does not compensate for the deficiencies of Oh and Kato outlined above for claim 1. Nor does Suzuki teach, disclose or suggest the additional features recited in claim 21. Instead, Suzuki discloses a liquid crystal device with wiring layers. In particular, Suzuki teaches a control board 10 having a wiring layer connected to a gate driver 5 and a gate drain 6. See col. 4, lines 43-65 and Fig. 2 of Suzuki.

Further, there is no motivation to combine features related to the sawtooth lens of Suzuki with the refracting alignment layers of Oh and/or the magnifying microlens array of Kato, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

The Office Action rejects claims 22-27 under 35 U.S.C. §103(a) over Oh and Kato and further in view of U.S. Patent 6,193,376 to Hayashi *et al.* (Hayashi). This rejection is respectfully traversed.

Hayashi does not compensate for the deficiencies of Oh and Kato outlined above for claim 1. Nor does Hayashi teach, disclose or suggest the additional features recited in claims 22-27. Instead, Hayashi discloses a display apparatus having an optical system 5 with opposing incident surfaces offset from parallel by an acute angle. In particular, Hayashi teaches a reflective angle for a display altered from the angle of illumination incidence by means of a sawtooth pattern lens. See col. 5, lines 45-61 and Fig. 2 of Hayashi.

Further, there is no motivation to combine features related to the sawtooth lens of Hayashi with the refracting alignment layers of Oh and/or the magnifying microlens array of Kato, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

The Office Action rejects claims 29 and 30 under 35 U.S.C. §103(a) over Oh and Kato and further in view of U.S. Patent 5,764,318 to Kurematsu *et al.* (Kurematsu). This rejection is respectfully traversed.

Oh and Kato do not teach or suggest a liquid crystal device including, *inter alia*, liquid crystal sandwiched between the first substrate and the second substrate; and a first alignment layer formed between the liquid crystal and the first substrate, and a second alignment layer, formed between the liquid crystal and the second substrate, the first and second alignment layers aligning the liquid crystal into an alignment state that produces contrast characteristics showing directivity with a higher contrast ratio in a clear viewing direction than in a direction opposite of the clear viewing direction, wherein the first substrate and the second substrate are formed with a first opening area and a second opening area for each pixel, and wherein, one of the first substrate and the second substrate irradiated with

incident light is formed with a microlens so as to oppose each pixel, as recited in claim 29, and similarly recited in claim 30.

Kurematsu does not compensate for the deficiencies of Oh and Kato outlined above for claims 1 and 28. Also, as admitted in the April 18, 2003 Final Office Action on page 7 at section 8(d), Kato fails to teach or suggest a microlens that refracts part of the incident light from opposite the clear viewing direction toward the unopened area, recited in claim 29. Nor does Kurematsu teach, disclose or suggest the additional features recited in claims 29 and 30. Instead, Kurematsu discloses a liquid crystal panel 1a with a microlens substrate 3a. See col. 5, lines 3-8 and Fig. 8 of Kurematsu.

Further, there is no motivation to combine features related to the microlens substrate of Kurematsu with the refracting alignment layers of Oh or with the magnifying microlens array of Kato, nor has the Office Action established sufficient motivation or a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

Applicants additionally assert that the claimed features provide for more light in the clear viewing direction passing through the panel than light from the opposite direction. None of the applied references provide for these features relating to a clear viewing direction, as recited in Applicants' claims.

A *prima facie* case of obviousness for a §103 rejection requires satisfaction of three basic criteria: there must be some suggestion or motivation either in the references or knowledge generally available to modify the references or combine reference teachings, a reasonable expectation of success, and the references must teach or suggest all the claim limitations. See MPEP §706.02(j). Applicants respectfully submit that the Office Action fails to satisfy these criteria with Oh, Kato, Suzuki, Hayashi and Kurematsu.

For at least these reasons, Applicants respectfully assert that the independent claims are now patentable over the applied references. The dependent claims are likewise patentable

over the applied references for at least the reasons discussed as well as for the additional features they recite. Consequently, all the claims are in condition for allowance. Thus, Applicants respectfully request that the rejections under 35 U.S.C. §103 be withdrawn.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



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Attachment:

Drawing Sheets Figs. 6-9, 11-14 and 27-30

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